Technology Demonstration Summary Sheet
Advanced Recyclable Media System Decontamination

THE NEED

The decontamination of radioactively contaminated concrete is a concern during the decontamination and decommissioning (D&D) process. The primary decontamination objectives are: (1) reduction of surface contamination levels to reduce potential personnel and environmental exposure, and (2) reduction of surface contamination levels to meet DOE Order 5400.5 for unrestricted use.

THE TECHNOLOGY

The Advanced Recyclable Media System (ARMS™), provided by Surface Technology Systems, Inc. is an open blast technology which uses a soft recyclable media. This media consists of a urethane foam matrix which can be manufactured in various grades of abrasiveness. The fiber media can be remade and/or reused up to 20 times and can clean almost any surface (wood, metal, or lead) and geometry including corners and the inside of air ducts. ARMS™ is divided into three units: the media feed unit, the sifter unit, and the media remake unit. The media is propelled from the feed unit toward the surface to be cleaned by a portable blast unit. The used media is then manually collected and placed into the sifter unit. Large debris (>1/4-in) and small fines (<1/16-in) are discarded as waste, and the remaining media can be used for media remake or can be fed back into the feed unit for recycling .

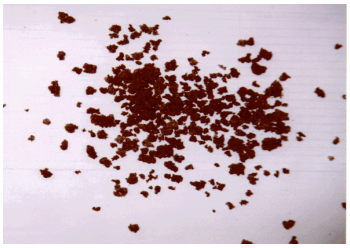
ARMS™ Feed Unit and Sifter

THE DEMONSTRATION

This demonstration tested the ARMS™ technology for its ability to decontaminate approximately 260 ft^2 of concrete flooring by coating removal. The testing was performed on the service floor of the Argonne National Laboratory, Chicago Pile 5 (CP-5) facility as part of the Large Scale Demonstration Project funded by DOE's Federal Energy Technology Center.

THE RESULTS

The ARMS™ technology blasted the 262 ft^2 of concrete flooring at a rate of 41.9 ft^2/hr. The demonstration required a crew of three people. At the beginning of the demonstration, 200 pounds (7.52 ft^3) of new media was placed in the media feed unit. This media was then used to blast the floor, manually collected using plastic shovels, sifted and recycled approximately 16 times during the demonstration. At the end of the demonstration, a total of 0.8 ft^3 of spent fines and large debris had been collected as waste and 4 ft^3 of reusable media remained. Radiological contamination prior to the demonstration included an area of fixed beta/gamma ranging from 3,200 to 263,200 dpm/100cm^2. After the demonstration, the contamination was localized to four hotspots which ranged from 4,000 to 19,000 dpm/100 cm^2. After the demonstration, the radiological level of the spent fines was 3,000 dpm and the remaining reusable media levels were measured to be 300-500 dpm.



ARMS™ Media

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